3UROSRVDO IRU 5HVWRUDWLRQ RI
3 6FLHQWLILF *HRWKHUPDO 7HFKQR

± 3RZHU 3RLQW 3UHVHQWDWLRQ ±
608 3RZHU 3OD\V &RQIHUHQFH 'OODV 7;

$XWKRUV 1DPHV
*(27+(50$/ :25/':,'(,1&
+Z\ /D 4XLQWD &$
ZZZ *HRWKHUPDO:RUOGZLGH FRP

29(59,(: 2) 7+(6$/721 6($ 6,78$7,21

7KH 6DOWRQ 6HD LV &DOLIRUQLD¶V ODUJHVW ODNH
WKDQ WKH 2FHDQ 7KH 6DOWRQ 6HD LV D ³WHUP
RXWOHWV :DWHU IORZV LQWR LW IURP VHYHUDO
ZDWHU OHDYHV WKH VHD LV E\ HYDSRUDWLRQ

7KH ODNH LV VKULQNLQJ H[SRVLQJ WKH ODNH EHG
OHYHOV DQG HQYLURQPHQWDO LVVXHV DV ZHOO
ELOOLRQ GROODU WRXULVW WUDGH

7KHUH LV VWURQJ SRVVLELOLW\ WKDW WKH VWDUW LQQ0R
ZDWHU IURP WKH FDQDO ZLOO EH GLYHUWHG WR
WKH GLVDSSHDUDQFH RI WKH 6DOWRQ 6HD

5XQRII ZDWHU IURP QHDUE\ DJULFXOWXUDO ILHO
SHVWLFLGHV DQG RWKHU SROOXWDQWV IURP 0H
PDNH LW DQ XQGHVLUDEOH WRXULVW GHVWLQDW

7KH ODNH LV PLOHV ORQJ PLOHV ZLGH DQG LV
6SULQJV LQ D EDVLQ IHHW EHORZ VHD OHYHO

7KH (DUWK¶V FUXVW DW WKH VRXWK HQG RI WKH 6D
7HPSHUDWXUH LQ WKH 6DOWRQ 6HD *HRWKHUPDO
OHVV WKDQ D PLOH EHORZ WKH VXUIDFH

6800$5< 2) 352326$/)25 5(6725$7,21 2) 7+(6$/72 &216,676 2)),9(3+$6(6

3KDVH ,&RQQHFWLQJ WKH 6DOWRQ6HD ZLWK WK
'LHJR 2FHDQVLGH DUHD ZLWK VH
DQG RXWIORZV

3KDVH ,%XLOGLQJ WZR 2QH GRUWKHUQ DQG RQ
VRXWKHUQ SDUW RI WKH 6DOWRQ

3KDVH ,%,XLOGLQJ RQH [SRZHU 6&DQW V\VWHP
DW RQH RI VHOHFWHG VHFWRU

3KDVH ,%XLOGLQJ VHYHUDO PRUH SRZHU SODQW
*+(V\VWHP RQH LQ HDFK VHOH

3KDVH 9&RQWLQXHG GHYHORSPHQW RI DGGLWLRQDO SRZHU SODQWV
6&, *+(V\VWHP DW HDFK VHOHF

GEOTHERMAL WORLDWIDE, INC.

(1(5*< 29(59,(: ,1 *(1(5$/

$V SRSXODWLRQ RQ RXU VKRUHOLQHV LQFUHDVLQJ GHPDQG IRU HOHFWULFLW\

1XFOHDU SRZHU SODQWV DQG RWKHU 3RZHU 3ODQWV ZLOO VHH

PDWHULDO OLIHWLPH XWLOLWLHV FRQVHUYDWLRQ

HQYLURQPHQW DQG RXU H[LVWHQFH

0RVW RI UHQHZDEOH HQHUJ\ WHFKQRO

À! B%ò•GÑD0Ð P%

/RFDWLRQ /LPLWD

&RXUWHV\ RI &DO(QHUJ\ ± 7KLV LOOXVWUDWLRQ UHSUHVHQWV DQ

6FKHPDWLF 9LHZ RI DQ (QKDQFHG *HRWKHU

5HTXLUHV

3HUPHDELOLW\ RI KR

+RUL]RQWDO URFN IR

6XEVWDQWLDO DPRXQ
EH LQMHFWHG DQG

7KLV ,OOXVWUDWLRQ LV D 6FKHPDWLF RI D FRQFHSWXDO WZR
LQ D ORZ SHUPHDELOLW\ FU\VWDOOLQH EDVHPHQW IRUPDWLRQ
&RXUWHV\ RI '2((QHUJ\ (IILFLHQF\ 5HQHZDEOH (QHUJ\

*(27+(50$/ :25/':,'(,1&

6FKHPDWLF 9LHZ RI DQ (QKDQFHG *HRWKHUP

5HTXLUHV

3HUPHDELOLW\ RI KRW

+RUL]RQWDO URFN IRUI

6XEVWDQWLDO DPRXQW
EH LQMHFWHG DQG P

7KLV LOOXVWUDWLRQ LV D VFKHPDWLF RI DQRWKHU FRQFHSW
LQ KRW URFN ' FXWDZD\ GLDJUDP PRGLILHG IURP $18 +RW
&RXUWHVWV\ RI KRWURFN DQX HGX DX

SCI-GGG
Apparatus

7KH 6&, *** V\VWHP XVHV VH
FRPSOHWHO\ FORVHG ORRS
JHQHUDWHV HOHFWULFLW\ G

Condenser
distributor

Generator

Converter

Turbine

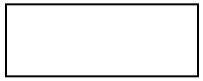
Boiler

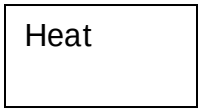
*(27+(50$/ :25/':,'(,1&

&URVV 6HFW
WKURXJK &

&URVV 6HFW
7KURXJK 7X

*(27+(50$/ :25/':,'(,1&




Heat

6FLHQWLILF *HRWKHUPDO 7HFKQRORJLHV &RUS &, DQG &, *+(V\VWHPV

7KH &,* *** V\VWHP JHRWKHUPDO HOHFWULFLW\ GRZQ
VRXUFH DQG WUDQVPLVVLRQ JURXQG OHYHO E\ PHDVXULQJ HOHFWULFDO FDEOH
7KH &,* *** V\VWHP JHRWKHUPDO GGLWLRQDO HOHFWULFLW\ JURXQG VXUIDFH
7KH &, *+(V\VWHP LQWHJUDO SDUW RI V\VWHP DQG FDQ EH VHSDUDWHG DV DQ +HDW ([FKDQJH $SSDUDWXV
7KH &, *+(V\VWHP KDV OHVV SURGXFWLRQ &, *** V\VWHP EXW WR EXLOG DQG PDLQ $OWHUQDWLYHO\ WKH &, *+(DSSDUDWXV VFDOHG IRU H[WUDFWLRQ DQG PDUJLQ
7KH 6FLHQWLILF *HRWKHUPDO 7HFKQRORJ\ GHVLJQ K\GURWKHUPDO UHVHUYRLU QRW OLPLWHG WR

6&, *** V\VWHP 6&, *+(V\VWHP

'LDJUDP RI WKH &RROLQJ 6\VWHP RI RQH W\SLFD

7KUHH ERLOHUV HYDSR
ZLWK GLIIHUHQW ZRU
ZLWK GLIIHUHQW ERL

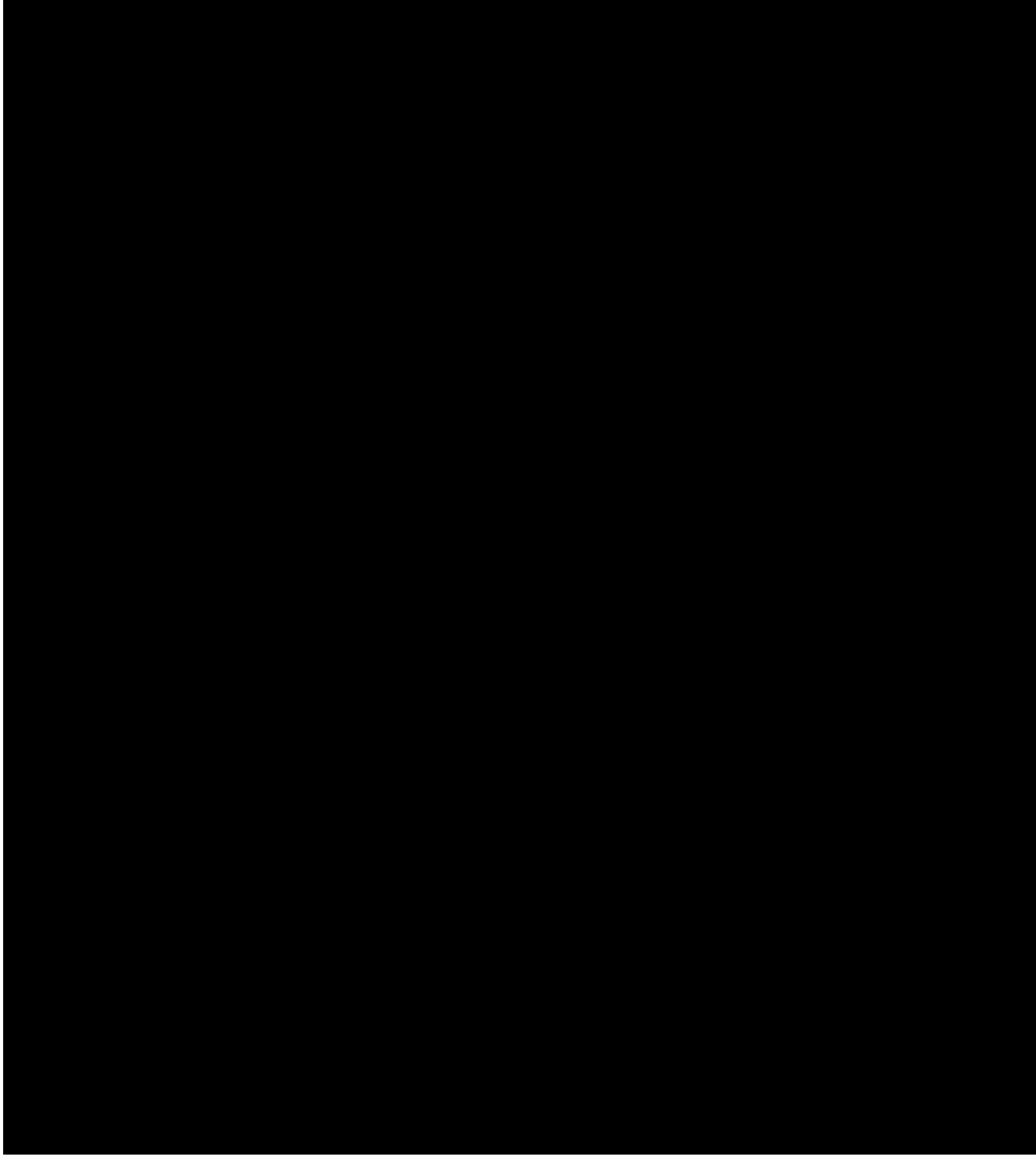
7KUHH ERLOHUV RI WKHV
3RZHU 8QLWV DUH FR
KHDW H[FKDQJHUV RI
LQ VL[ZHOOERUHV D
HOHFWULFLW\ RQ WK

Control Center

*(27+(50$/ :25/':,'(,1.&

3ODLQ YLHZ RI RQH RI WK
%LQDU\ 3RZHU 8QLW FRX
KHDW H[FKDQJHUV RI WK

&URVV VHFWLRQDO YLHZ



*(27+(50$/:25/':,'(,,1&

*(27+(50$/:25/':,'(,,1&

5HPDLQLQJ PRUH FRQ
VDOW\ ZDWHU QRZ OH
GLVWLOOHU LV GL\
SLSH OLQH LQWR U
LQ WKH GHVDOLQL]
SURFHVVLQJ EXLOGLQ

6DOW\ ZDWHU LQ UHP
LV KHDWHG E\ V\VW
IURP ILUVW FORVHG O
DQG IURP FRROLQJ FR

(YDSRUDWHG PRLVWXU
FRQGHQVHG WKURXJK
FRQGHQVHUV DW X
RI WKH EXLOGLQJ DQG
WKURXJK WXEHV LQ
ZDWHU F P P P PÂæÀ H G Đ

*(27+(50$/:25/':,'(,,1&

),* LOOXVWUDWHV D SH

*(27+(50$/:25/':,'(,,1&

3URSRVDO IRU 5HVWRUDWLRQ RI WKH 6D

- 6DOWRQ 6HD
  - 'LNHV IRUPLQJ
    - IRU FROOHF
      WUHDW
      UXQRI
      SURYL
      VDQFW
  - 2XWIORZ SLSHOLQH
    RXW KLJK VDO
    WKH 6DOWRQ 6
    GLVSHUVLQJ L
  - ,QIORZ SLSHOLQH E
    ZDWHU IURP W
    6DQ 'LHJR DUH
    6HD
  - 3RZHU 3ODQWV
  -)UHVK ZDWHU OLQH

*(27+(50$/:25/':,'(,,1&

3URSRVDO IRU 5HVWRUDWLRQ RI WKH 6D
3RZHU 3ODQWV 6RXWKHDVWHUQ 6HFW

± 6DOWRQ 6HD

± 'LNHV IRUPLQJ S
FROOHFW
IDUPODQ
SURYLGL
VDQFWXD

± 2FHDQLF ZDWHU IUR

± 3RZHU 3ODQWV 6RXW

± +LJK VDOLQLW\ OLQH

±)UHVK ZDWHU OLQH

3RZHU 3ODQW

± 3RZHU 3ODQW

± :HOOV

± 3RZHU 8QLWV

± &RQWURO &HQWHU

± 3URFHVVLQJ %XLO

±)UHVK ZDWHU SRQ

± +HDW ([FKDQJH V\

± 5DLOURDG WUDFN
PDLQWHQDQ

*(27+(50$/:25/':,'(,,1&

3RZHU 3ODQWIRUP 2YHUYLHZ

- :HOOV
- 3RZHU 8QLWV
- &RQWURO &HQWHU
- 3URFHVVLQJ %XLOG
-)UHVK ZDWHU SRQG
- +HDW ([FKDQJH V\V
  -)HHGLQJ OLQH 6DOWR ERLOH
- ,QIORZ FRROLQJ OL
- 2XWIORZ FRROLQJ
- &RQGHQVHG IUHVK

*(27+(50$/:25/':,'(,,1&

*(27+(50$/:25/':,'(,,1&

3RZHU 3ODQW ± (QODUJHG 2QH 6LYHU

± :HOOV

± 3RZHU 8QLWV

± &RQWURO &HQWHU

± 3URFHVVLQJ %XLOG

±)UHVK ZDWHU SR

± +HDW ([FKDQJH V\

±)HHGLQJ OLQH IURP
6HD WR WKH E

± ,QIORZ FRROLQJ OL
IURP FDQDO

± 2XWIORZ FRROLQJ O

± &RQGHQVHG IUHVK

*(27+(50$/:25/':,'(,,1&

:HOO

'HUULFN

3RZHU 8QLWV

+HDW ([FKDQJH V\VW

%RLOHU 'LVWLOOHU

7XUELQH

&RQGHQVHU

*HQHUDWRU

,QIORZ FRROLQJ OL
ZDWHU IURP

2XWIORZ FRROLQJ

&RQGHQVHG IUHVK

* (2 7 + (5:0 2 5// ' : , ' (/

6FKHPDWLF 3ODQ YLHZ RI 3RZHU 8QL
ZLWK DOWHUQDWLYH WZR VHFRQGDU\ ELQ

÷)€ `T W Q ÷a‘’Ð 0
Bv U€ ` 8 Qv L W V`T W Q

W Q ÷ ’Ð 0
&UR„ `Q

* (2 7 + (5:0255// ' : , ' (, , 1 &

*(27+(50$/

&URVV 6HFWLRQDO YLHZ RI 3RZHU 8QLW PRG
HOHFWULFLW\ IUHVK ZDWHU DQG H[WUDF

:HOO

3RZHU 8QLWV

%RLOHU 'LVWLOOHU

7XUELQH

&RQGHQVHU

*HQHUDWRU

,QIORZ &RROLQJ /LQH

2XWIORZ &RROLQJ /LQ

&RQGHQVHG)UHVK :DW

%ULQH ([FDYDWLRQ /L

%ULQH /LQH WR 3URFH
%XLOGLQJ

5HWXUQ %ULQH /LQH W

* (2 7 + (5:0 25 // ' : , ' (, , 1 &

0DLQWHQDQFH RI WKH 6&, ***

%DVLF PDLQWHQDQFH RI WKH DSSL
WHPSHUDWXUH PDQDJLQJ OHYHOV
OXEULFDWLRQ FDQ EH PDQDJHG IU
VXUIDFH WKURXJK VHUYLFH OLQHV

([WHQVLYH PDLQWHQDQFH ± VXFK D
EHDULQJV WXUELQH JHQHUDWRU R
UHTXLUHV UHPRYDO RI DSSDUDWXV

$GYDQWDJHV RI WKH 6FLHQWLILF *HRWKHWKH 6&, *** *+6&V\VWHPV

$GYDQWDJHV RI WKH 6FLHQWLILF *HRWKHUPDO :25/':,'(,1&
WKH 6&,

*(27+(50$/ :25/':,'(,1&

86 3DWHQW ,VVXHG RQ
'HFHPEHU

7LWOH 6HHO &RQWDLQHG ,
*HRWKHUPDO *HQHUD

*(27+(50$/ :25/':,'(,1&

86 3DWHQW ,VVXHG R
2FWREHU

7LWOH 6HOI &RQWDLQ
*HRWKHUPDO *HQHUDW

6HYHUDO 3DWHQW 3H

5 (/ (9 $ 1 7 4 8 2 7 (6 3‰m Â"XˆÐ

³ : H F D Q Q R W V R O Y H R X U S U R E O H P V Z L W K
X V H G Z K H Q Z H F U H D W H G W K H P ´

~ *Albert Einstein (1879-1955)* ~

****

³ $ O O W U X W K S D V V H V W K U R X J K W K U H H V V
‡) L U V W L W L V U L G L F X O H G
‡ 6 H F R Q G L W L V Y L R O H Q W O \ R S S R V H
‡ 7 K L U G L W L V D F F H S W H G D V V H O I H

‡ ~ *Arthur Schopenhauer (1788-1860)* ~